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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR   | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|------------------------|---------------------|------------------|
| 10/604,517  | 07/28/2003  | Timothy H. Daubenspeck | BUR920020115US1     | 1516             |
| 23389   | 7590        | 07/14/2004             | EXAMINER            |                  |
| SCULLY SCOTT MURPHY & PRESSER, PC<br>400 GARDEN CITY PLAZA<br>GARDEN CITY, NY 11530 |             |                        |                     | DUONG, KHANH B   |
| ART UNIT  |             | PAPER NUMBER           |                     |                  |
|   |             | 2822                   |                     |                  |

DATE MAILED: 07/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |                    |
|------------------------------|------------------------|---------------------|--------------------|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |                    |
|                              | 10/604,517             | DAUBENSPECK ET AL.  |                    |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |                    |
|                              | Khanh Duong            | 2822                | <i>[Signature]</i> |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### **Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 26 April 2004.

2a)  This action is **FINAL**.                            2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## **Disposition of Claims**

4)  Claim(s) 1-15 is/are pending in the application.  
4a) Of the above claim(s) 8-15 is/are withdrawn from consideration.  
5)  Claim(s) \_\_\_\_\_ is/are allowed.  
6)  Claim(s) 1-7 is/are rejected.  
7)  Claim(s) \_\_\_\_\_ is/are objected to.  
8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on 28 July 2003 is/are: a)  accepted or b)  objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/28/03.

4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.

5)  Notice of Informal Patent Application (PTO-152)  
6)  Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Applicant's Election*

Applicant's election with traverse of Group II, claims 1-7 in the reply filed on April 26, 2004 is acknowledged. The traversal is on the ground(s) that the Examiner's reason is insufficient to support the restriction requirement and that such restriction requirement contravenes "the constitutional purpose to promote and encourage the progress of science and the useful arts". This is not found persuasive because Applicant has not specifically addressed why the reason for restriction is insufficient in the view of one of ordinary skill in the art.

The requirement is still deemed proper and is therefore made FINAL.

### *Specification*

The disclosure is objected to because of the following informalities: paragraph [0005], line 1 to 2, the phrase "cracks form that can ... causing fails" should be --cracks formed can ... causing failures--.

Appropriate correction is required.

\*\*\* Applicant is further advised to recheck the entire specification for other grammatical errors.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1, 4, 5 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Suwanai et al. (U.S. 5,994,762), submitted in IDS.**

Suwanai et al. ("Suwanai") discloses in FIG. 2 a crack stop for an integrated circuit (IC) chip 1 having an active circuit area, comprising: the IC chip 1 including metal interconnects which do not form a self-passivating oxide layer, in a low-K dielectric material (BPSG: 17, 20, 23); a moisture barrier/edge seal (GR: 18, 21, 24) positioned along the outer peripheral edges of the active area of the IC chip 1; a crack stop formed by at least one trench or void region S outside of the moisture barrier/edge seal GR on the outer periphery of the IC chip 1, for preventing damage to the active area of the IC chip 1 caused by chipping and cracking formed along peripheral edges of the IC chip 1 during a dicing operation performed on the IC chip 1 (see col. 6 to 9).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suwanai in view of Ma et al. (U.S. 6,509,622).**

Re claims 2 and 3, Suwanai discloses the metal interconnects being comprised of other conductive metals, such as Ti, W and Al instead of Cu and Ag.

Ma et al. ("Ma") suggests using interconnects comprising of Cu, Ag and Al (see col. 2, ln. 41-44).

Since Suwanai and Ma are both from the same field of endeavor, the purpose disclosed by Ma would have been recognized in the pertinent prior art of Suwanai.

Therefore, because these metals were art-recognized equivalent materials for interconnects as demonstrated by Suwanai and Ma at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute one metal for the other.

**Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suwanai in view of Mulligan et al. (US 2003/0100143 A1).**

Re claim 6, Suwanai fails to disclose a plurality of trenches or void regions formed outside of the moiSture barrier/edge seal on the outer periphery of the IC chip.

Mulligan et al. ("Mulligan") teaches in FIG. 2 a forming two trenches 118 and 118' on both sides of each dicing street 104.

Since Suwanai and Mulligan are both from the same field of endeavor, the purpose disclosed by Mulligan would have been recognized in the pertinent prior art of Suwanai.

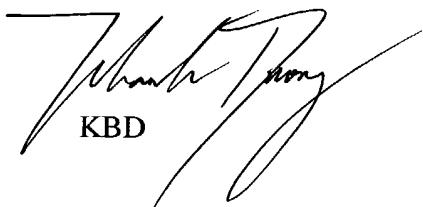
Therefore, it would have been obvious to one of ordinary skill in the art to modify the device of Suwanai with a plurality of trenches as taught by Mulligan, since such modification would prevent cracking and/or delamination problems on both sides of each dicing street.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Duong whose telephone number is (571) 272-1836. The examiner can normally be reached on Monday - Thursday (9:00 AM - 6:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (571) 272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



KBD



Michael Trinh  
Primary Examiner  
PCT SPE